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| (51) International Patent Classification 7: A61K 9/22, C08F 2/18, 20/18 | A3 | (11) International Publication Number: WO 00/41528 (43) International Publication Date: 20 July 2000 (20.07.00) |
| (21) International Application Number: PCT/US00/00609 (22) International Filing Date: 11 January 2000 (11.01.00) (30) Priority Data: 60/115,886 14 January 1999 (14.01.99) US (71) Applicant (for all designated States except US): AMCOL INTERNATIONAL CORPORATION [US/US]; 1500 West Shure Drive, Arlington Heights, IL 60004 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): SOJKA, Milan, F. [US/US]; 775 Yorktown, Algonquin, IL 60102 (US). SPINDLER, Ralph [US/US]; 24140 Lakeside Drive, Lake Zurich, IL 60047 (US). (74) Agent: NAPOLI, James, J.; Marshall, O'Toole, Gerstein, Murray & Borun, 6300 Sears Tower, 233 South Wacker Drive, Chicago, IL 60606 (US). | | (81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> (88) Date of publication of the international search report: 2 November 2000 (02.11.00) |
| (54) Title: IMPROVED CONTROLLED RELEASE COMPOSITIONS AND METHOD (57) Abstract A controlled release composition comprising an adsorbent polymer, an active agent, and a release retardant is disclosed. The composition has an improved ability to release the active agent over an extended time period. | | |

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 00/00609

A. CLASSIFICATION OF SUBJECT MATTER

A61K9/22, C08F2/18, C08F20/18

According to International Patent Classification (IPC) or to both national classification and IPC 7

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61K, C08F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------------------|
| X | US 5387411 A (ABRUTYN ET AL.) 07 February 1995, abstract, column 4, lines 19-50, column 6, lines 11-15, column 7, line 56 - column 8, line 48, claims. -- | 1-14, 16, 19, 20 |
| X | US 5830960 A (SOJKA) 03 November 1998, abstract, column 10, lines 31-40, examples 4-6, claims (cited in the application). -- | 1-11, 13, 14, 16, 18, 20 |
| X | US 5830967 A (SOJKA) 03 November 1998, abstract, column 1, | 1-12, 14-16, 18, 20 |

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|--|--|--------------------------|
| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| | lines 17-45, column 10, lines 2-27, column 11, line 4 - column 12, line 21; claims (cited in the application). -- | |
| X | WO 96/14058 A (EURO-CELTIQUE, S.A.) 17 May 1996, abstract, claims. -- | 1,2, 11-16, 18 |
| X | US 5559202 A (YOSHIKAWA) 24 September 1996, the whole document. ---- | 1,3,7, 9,16, 17-20 |

ANHANG

Zum internationalen Recherchenbericht über die internationale Patentanmeldung Nr.

ANNEX

To the International Search Report to the international Patent Application No.

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Au rapport de recherche international relatif à la demande de brevet international n°

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|--|--|--|--|
| US A 5387411 | 07-02-1995 | CA AA 2050188 | 06-04-1992 |
| | | JP A2 6040873 | 15-02-1994 |
| US A 5830960 | 03-11-1998 | DE C0 69509468 | 10-06-1999 |
| | | EP A1 709406 | 01-05-1996 |
| | | EP B1 709406 | 06-05-1999 |
| | | JP A2 8208719 | 13-08-1996 |
| | | US A 5618877 | 08-04-1997 |
| | | US A 5773546 | 30-06-1998 |
| | | US A 5830967 | 03-11-1998 |
| | | US A 5837790 | 17-11-1998 |
| | | US A 5955552 | 21-09-1999 |
| | | US A 5608005 | 04-03-1997 |
| | | EP A1 830398 | 25-03-1998 |
| | | EP A4 830398 | 01-03-2000 |
| | | US A 5677407 | 14-10-1997 |
| | | WO A1 9640809 | 19-12-1996 |
| | | US A 5834577 | 10-11-1998 |
| | | US A 5712358 | 27-01-1998 |
| | | US A 5777054 | 07-07-1998 |
| | | EP A2 863159 | 09-09-1998 |
| | | EP A3 863159 | 19-04-2000 |
| | | JP A2 10244153 | 14-09-1998 |
| | | EP A2 863161 | 09-09-1998 |
| | | EP A3 863161 | 19-04-2000 |
| | | JP A2 10245409 | 14-09-1998 |
| | | EP A2 863160 | 09-09-1998 |
| | | EP A3 863160 | 19-04-2000 |
| | | JP A2 10244152 | 14-09-1998 |
| US A 5830967 | 03-11-1998 | DE C0 69509468 | 10-06-1999 |
| | | EP A1 709406 | 01-05-1996 |
| | | EP B1 709406 | 06-05-1999 |
| | | JP A2 8208719 | 13-08-1996 |
| | | US A 5618877 | 08-04-1997 |
| | | US A 5773546 | 30-06-1998 |
| | | US A 5830960 | 03-11-1998 |
| | | US A 5837790 | 17-11-1998 |
| | | US A 5955552 | 21-09-1999 |
| | | US A 5608005 | 04-03-1997 |
| | | EP A1 830398 | 25-03-1998 |
| | | EP A4 830398 | 01-03-2000 |
| | | US A 5677407 | 14-10-1997 |
| | | WO A1 9640809 | 19-12-1996 |
| | | US A 5834577 | 10-11-1998 |
| | | US A 5712358 | 27-01-1998 |
| | | US A 5777054 | 07-07-1998 |
| | | EP A2 863161 | 09-09-1998 |
| | | EP A3 863161 | 19-04-2000 |
| | | JP A2 10245409 | 14-09-1998 |
| | | EP A2 863159 | 09-09-1998 |

| ANHANG | | ANNEX | | ANNEXE | |
|--|---|---|---|--|--|
| Zum internationalen Recherchenbericht über die internationale Patentanmeldung Nr. | | To the International Search Report to the international Patent Application No. | | Au rapport de recherche international relatif à la demande de brevet international n° | |
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| Im Recherchenbericht angeführte Patentdokumente Patent document cited in search report Document de brevet cité dans le rapport de recherche | Datum der Veröffentlichung Publication date Date de publication | Mitglied(er) der Patentfamilie Patent family member(s) Membre(s) de la famille de brevets | Datum der Veröffentlichung Publication date Date de publication | | |
| | | EP A3 863159 | 19-04-2000 | | |
| | | JP A2 10244153 | 14-09-1998 | | |
| | | EP A2 863160 | 09-09-1998 | | |
| | | EP A3 863160 | 19-04-2000 | | |
| | | JP A2 10244152 | 14-09-1998 | | |
| WO A1 9614058 | 17-05-1996 | AU A1 41570/96 | 31-05-1996 | | |
| | | AU B2 705894 | 03-06-1999 | | |
| | | AU A1 47362/99 | 28-10-1999 | | |
| | | CA A2 2204180 | 17-05-1996 | | |
| | | EP A1 785775 | 30-07-1997 | | |
| | | EP A4 785775 | 19-08-1998 | | |
| | | HU A2 77626 | 29-06-1998 | | |
| | | IL A0 115871 | 31-01-1996 | | |
| | | IL A1 115871 | 17-08-1999 | | |
| | | JP T2 10508608 | 25-08-1998 | | |
| | | US A 5965161 | 12-10-1999 | | |
| | | ZA A 9509367 | 13-06-1996 | | |
| | | US A 5958452 | 28-09-1999 | | |
| US A 5559202 | 24-09-1996 | DE C0 69310313 | 05-06-1997 | | |
| | | DE T2 69310313 | 14-08-1997 | | |
| | | EP A1 596138 | 11-05-1994 | | |
| | | EP A4 596138 | 17-11-1994 | | |
| | | EP B1 596138 | 02-05-1997 | | |
| | | JP A2 5317688 | 03-12-1993 | | |
| | | WO A1 9323437 | 25-11-1993 | | |